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Term: 16 and suspens$3

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Search History

DATE: Monday, August 09, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ			
L8	l6 and suspens$3	19	L8
L7	L6 and intrins$2 emission$1	1	L7
L6	L5 and electromagnet$2 radiat$3	22	L6
L5	metal same solid same biomolecule$1	82	L5
L4	L3 and metal	2	L4
L3	L2 and support$3	2	L3
L2	L1 and biomolecule$1	7	L2
L1	lakowicz.in.	79	L1

END OF SEARCH HISTORY

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> s intrinsic (10a) fluorescence
L1       11074 INTRINSIC (10A) FLUORESCENCE

=> s l1 and (electromagne###(10a)emission)
L2           0 L1 AND (ELECTROMAGNE###(10A) EMISSION)

=> s l1 and metal particle#
L3           1 L1 AND METAL PARTICLE#

=> s l1 and (DNA or peptide or amino acid)
   2 FILES SEARCHED...
L4        2670 L1 AND (DNA OR PEPTIDE OR AMINO ACID)

=>

=> ss

ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):

ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):

ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):

ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):end
SEARCH ENDED BY USER

=> s l4 and metal particle#
L5           0 L4 AND METAL PARTICLE#

=> d l3 bib ab kwic

L3   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2002:637877  CAPLUS
DN   137:152046
TI   Compositions and methods for increasing fluorescence intensity
IN   Lakowicz, Joseph R.
PA   University of Maryland, Baltimore, USA
SO   PCT Int. Appl., 95 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ---------------     ----   --------    --------------------    --------
PI   WO 2002064837        A1    20020822    WO 2002-US3901          20020211
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
             CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2002160400        A1    20021031    US 2002-73625           20020211
     EP 1360332           A1    20031112    EP 2002-718938          20020211
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
PRAI US 2001-268326P      P     20010214
     WO 2002-US3901       W     20020211
AB   The invention concerns compns. and methods for increasing the fluorescence
     intensity of mols. are provided.  In particular, compns. and methods
     directed to increasing the intrinsic fluorescence of
     biomols. and low quantum yield fluorophores are described.  The
```

intrinsic fluorescence of biomols. is increased by positioning a **metal particle** and a biomol. at a distance apart sufficient to increase the radiative decay rate of the biomol. Methods for the identification of nucleic acids are also provided. The compns. and methods can also be used to increase the emission of any fluorophore, such as the extrinsic probes used to label biomols.

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB The invention concerns compns. and methods for increasing the fluorescence intensity of mols. are provided. In particular, compns. and methods directed to increasing the **intrinsic fluorescence** of biomols. and low quantum yield fluorophores are described. The **intrinsic fluorescence** of biomols. is increased by positioning a **metal particle** and a biomol. at a distance apart sufficient to increase the radiative decay rate of the biomol. Methods for the identification of nucleic acids are also provided. The compns. and methods can also be used to increase the emission of any fluorophore, such as the extrinsic probes used to label biomols.

ST fluorescence **metal particle** film nucleic acid protein array probe; electromagnetic radiation assocn

=> s l3 and (DNA or peptide or amino acid#)
2 FILES SEARCHED...
L6 1 L3 AND (DNA OR PEPTIDE OR AMINO ACID#)

=> d l4 bib ab kwic

L4 ANSWER 1 OF 2670 MEDLINE on STN
AN 2004390426 IN-PROCESS
DN PubMed ID: 15294801
TI Mutational analysis of mesentericin y105, an anti-listeria bacteriocin, for determination of impact on bactericidal activity, in vitro secondary structure, and membrane interaction.
AU Morisset Dany; Berjeaud Jean-Marc; Marion Didier; Lacombe Christian; Frere Jacques
CS Institut de Biologie Moleculaire et d'Ingenierie Genetique, Equipe de Microbiologie Fondamentale et Appliquee, UMR CNRS 6008, Universite de Poitiers, 40 avenue du Recteur Pineau, 86022 Poitiers Cedex, France.. jacques.frere@univ-poitiers.fr
SO Applied and environmental microbiology, (2004 Aug) 70 (8) 4672-80. Journal code: 7605801. ISSN: 0099-2240.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-DATA-REVIEW; IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20040806
Last Updated on STN: 20040806
AB Mesentericin Y105 is a 37-residue bacteriocin produced by Leuconostoc mesenteroides Y105 that displays antagonistic activity against gram-positive bacteria such as Enterococcus faecalis and Listeria monocytogenes. It is closely related to leucocin A, an antimicrobial **peptide** containing beta-sheet and alpha-helical structures. To analyze structure-function relationships and the mode of action of this bacteriocin, we generated a collection of mesentericin derivatives. Mutations were obtained mostly by PCR random mutagenesis, and the peptides were produced by an original system of heterologous expression recently described (D. Morisset and J. Frere, Biochimie 84:569-576, 2002). Ten derivatives were obtained displaying modifications at eight different positions in the mesentericin Y105 sequence. Purified peptides were incorporated into lysophosphatidylcholine micelles and analyzed by circular dichroism. The alpha-helical contents of these peptides were

compared and related to their respective bactericidal activities. Moreover, studies of the **intrinsic fluorescence** of tryptophan residues naturally occurring at positions 18 and 37 revealed information about insertion of the peptides in micelles. A model for the mode of action of mesentericin Y105 and related bacteriocins is proposed.

AB . . . activity against gram-positive bacteria such as Enterococcus faecalis and Listeria monocytogenes. It is closely related to leucocin A, an antimicrobial **peptide** containing beta-sheet and alpha-helical structures. To analyze structure-function relationships and the mode of action of this bacteriocin, we generated a. . . dichroism. The alpha-helical contents of these peptides were compared and related to their respective bactericidal activities. Moreover, studies of the **intrinsic fluorescence** of tryptophan residues naturally occurring at positions 18 and 37 revealed information about insertion of the peptides in micelles. A. . .

=> d l6 bib ab kwic

L6 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:637877 CAPLUS
DN 137:152046
TI Compositions and methods for increasing fluorescence intensity
IN Lakowicz, Joseph R.
PA University of Maryland, Baltimore, USA
SO PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002064837	A1	20020822	WO 2002-US3901	20020211
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2002160400	A1	20021031	US 2002-73625	20020211
EP 1360332	A1	20031112	EP 2002-718938	20020211
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI US 2001-268326P	P	20010214		
WO 2002-US3901	W	20020211		

AB The invention concerns compns. and methods for increasing the fluorescence intensity of mols. are provided. In particular, compns. and methods directed to increasing the **intrinsic fluorescence** of biomols. and low quantum yield fluorophores are described. The **intrinsic fluorescence** of biomols. is increased by positioning a **metal particle** and a biomol. at a distance apart sufficient to increase the radiative decay rate of the biomol. Methods for the identification of nucleic acids are also provided. The compns. and methods can also be used to increase the emission of any fluorophore, such as the extrinsic probes used to label biomols.

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB The invention concerns compns. and methods for increasing the fluorescence intensity of mols. are provided. In particular, compns. and methods directed to increasing the **intrinsic fluorescence** of

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ST fluorescence **metal particle** film nucleic acid protein array probe; electromagnetic radiation assocn

IT **Amino acids**, analysis
Carbohydrates, analysis
Lipids, analysis
Nucleic acids
Nucleosides, analysis
Nucleotides, analysis
Proteins
RL: ANT (Analyte); ANST (Analytical study)
(compns. and methods for increasing fluorescence intensity)

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=> s intrinsic (10a)fluorescence(10a)(DNA or peptide or amino acid#)
   3 FILES SEARCHED...
L7          413 INTRINSIC (10A) FLUORESCENCE(10A)(DNA OR PEPTIDE OR AMINO ACID#)


=> d l7 and (metal(10a)(partile or support or solid))
'AND' IS NOT A VALID FORMAT
'(METAL(10A)(PARTILE' IS NOT A VALID FORMAT
'OR' IS NOT A VALID FORMAT
'SUPPORT' IS NOT A VALID FORMAT
'OR' IS NOT A VALID FORMAT
'SOLID))' IS NOT A VALID FORMAT
In a multifile environment, a format can only be used if it is valid
in at least one of the files.  Refer to file specific help messages
or the STNGUIDE file for information on formats available in
individual files.
REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):end

=> s l7 and (metal(10a)(partile# or support or solid#))
L8            4 L7 AND (METAL(10A)(PARTILE# OR SUPPORT OR SOLID#))

=> dup rem l8
PROCESSING COMPLETED FOR L8
L9            1 DUP REM L8 (3 DUPLICATES REMOVED)

=> d l9 bib ab kwic

L9   ANSWER 1 OF 1     MEDLINE on STN                    DUPLICATE 1
AN   2003419129     MEDLINE
DN   PubMed ID: 12924942
TI   Three conformational states of the p300 CH1 domain define its functional
     properties.
AU   Dial Ravina; Sun Zhen-Yu J; Freedman Steven J
CS   Division of Hemostasis and Thrombosis and Division of Hematology-Oncology,
     Beth Israel Deaconess Medical Center, 330 Brookline Avenue, Boston,
     Massachusetts 02215, USA.
SO   Biochemistry, (2003 Aug 26) 42 (33) 9937-45.
     Journal code: 0370623. ISSN: 0006-2960.
CY   United States
DT   Journal; Article; (JOURNAL ARTICLE)
LA   English
FS   Priority Journals
EM   200310
```

ED Entered STN: 20030909
Last Updated on STN: 20031002
Entered Medline: 20031001

AB Numerous transcription factors interact with the basal transcriptional machinery through the transcriptional co-activators p300 and CREB-binding protein (CBP). The Zn(2+)-binding cysteine/histidine-rich 1 (CH1) domain of p300/CBP binds many of these transcription factors, including hypoxia-inducible factor (HIF). We studied the structural and biophysical properties of the p300 CH1 domain alone and bound to the HIF-1 alpha C-terminal transactivation domain (TAD) to understand the diverse binding properties of CH1. The Zn(2+)-bound CH1 domain (CH1-Zn(2+)) and the HIF-1 alpha TAD-CH1 complex (CH1-Zn(2+)-HIF-1 alpha) are similarly helical, whereas metal-free CH1 is mostly random coil. CH1-Zn(2+) undergoes noncooperative thermal denaturation, does not have a near-UV elliptical signal, and binds the hydrophobic fluorophore ANS. In contrast, the CH1-Zn(2+)-HIF-1 alpha complex undergoes cooperative thermal denaturation, does produce a near-UV signal, and does not bind ANS. Addition of Zn(2+) ions to metal-free CH1 produced one conformational change, and subsequent addition of a HIF-1 alpha TAD **peptide** induced a second conformational change as detected by **intrinsic** tryptophan **fluorescence** spectroscopy. The NMR (1)H-(15)N HSQC spectrum of CH1-Zn(2+) exhibits few poorly dispersed peaks with broad line widths. Removal of metal ions produces more poorly dispersed peaks with sharper line widths. Addition of a HIF-1 alpha TAD peptide to CH1-Zn(2+) produces many well-dispersed peaks with sharp line widths. Taken together, these data **support** three conformational states for CH1, including an unstructured **metal**-free domain, a partially structured Zn(2+)-bound domain with molten globule characteristics, and a stable, well-ordered HIF-1 alpha TAD-CH1 complex.

AB . . . ANS. Addition of Zn(2+) ions to metal-free CH1 produced one conformational change, and subsequent addition of a HIF-1 alpha TAD **peptide** induced a second conformational change as detected by **intrinsic** tryptophan **fluorescence** spectroscopy. The NMR (1)H-(15)N HSQC spectrum of CH1-Zn(2+) exhibits few poorly dispersed peaks with broad line widths. Removal of metal. . . of a HIF-1 alpha TAD peptide to CH1-Zn(2+) produces many well-dispersed peaks with sharp line widths. Taken together, these data **support** three conformational states for CH1, including an unstructured **metal**-free domain, a partially structured Zn(2+)-bound domain with molten globule characteristics, and a stable, well-ordered HIF-1 alpha TAD-CH1 complex.

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=> s l7 and metal
L10          18 L7 AND METAL

=> dup rem l10
PROCESSING COMPLETED FOR L10
L11           9 DUP REM L10 (9 DUPLICATES REMOVED)

=> d l11 1-9 bib ab kwic
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L11 ANSWER 1 OF 9 MEDLINE on STN DUPLICATE 1
AN 2003419129 MEDLINE
DN PubMed ID: 12924942
TI Three conformational states of the p300 CH1 domain define its functional properties.
AU Dial Ravina; Sun Zhen-Yu J; Freedman Steven J
CS Division of Hemostasis and Thrombosis and Division of Hematology-Oncology, Beth Israel Deaconess Medical Center, 330 Brookline Avenue, Boston, Massachusetts 02215, USA.
SO Biochemistry, (2003 Aug 26) 42 (33) 9937-45.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)

LA English
FS Priority Journals
EM 200310
ED Entered STN: 20030909
Last Updated on STN: 20031002
Entered Medline: 20031001

AB Numerous transcription factors interact with the basal transcriptional machinery through the transcriptional co-activators p300 and CREB-binding protein (CBP). The Zn(2+)-binding cysteine/histidine-rich 1 (CH1) domain of p300/CBP binds many of these transcription factors, including hypoxia-inducible factor (HIF). We studied the structural and biophysical properties of the p300 CH1 domain alone and bound to the HIF-1 alpha C-terminal transactivation domain (TAD) to understand the diverse binding properties of CH1. The Zn(2+)-bound CH1 domain (CH1-Zn(2+)) and the HIF-1 alpha TAD-CH1 complex (CH1-Zn(2+)-HIF-1 alpha) are similarly helical, whereas **metal**-free CH1 is mostly random coil. CH1-Zn(2+) undergoes noncooperative thermal denaturation, does not have a near-UV elliptical signal, and binds the hydrophobic fluorophore ANS. In contrast, the CH1-Zn(2+)-HIF-1 alpha complex undergoes cooperative thermal denaturation, does produce a near-UV signal, and does not bind ANS. Addition of Zn(2+) ions to **metal**-free CH1 produced one conformational change, and subsequent addition of a HIF-1 alpha TAD **peptide** induced a second conformational change as detected by **intrinsic** tryptophan **fluorescence** spectroscopy. The NMR (1)H-(15)N HSQC spectrum of CH1-Zn(2+) exhibits few poorly dispersed peaks with broad line widths. Removal of **metal** ions produces more poorly dispersed peaks with sharper line widths. Addition of a HIF-1 alpha TAD peptide to CH1-Zn(2+) produces many well-dispersed peaks with sharp line widths. Taken together, these data support three conformational states for CH1, including an unstructured **metal**-free domain, a partially structured Zn(2+)-bound domain with molten globule characteristics, and a stable, well-ordered HIF-1 alpha TAD-CH1 complex.

AB . . . properties of CH1. The Zn(2+)-bound CH1 domain (CH1-Zn(2+)) and the HIF-1 alpha TAD-CH1 complex (CH1-Zn(2+)-HIF-1 alpha) are similarly helical, whereas **metal**-free CH1 is mostly random coil. CH1-Zn(2+) undergoes noncooperative thermal denaturation, does not have a near-UV elliptical signal, and binds the. . . complex undergoes cooperative thermal denaturation, does produce a near-UV signal, and does not bind ANS. Addition of Zn(2+) ions to **metal**-free CH1 produced one conformational change, and subsequent addition of a HIF-1 alpha TAD **peptide** induced a second conformational change as detected by **intrinsic** tryptophan **fluorescence** spectroscopy. The NMR (1)H-(15)N HSQC spectrum of CH1-Zn(2+) exhibits few poorly dispersed peaks with broad line widths. Removal of **metal** ions produces more poorly dispersed peaks with sharper line widths. Addition of a HIF-1 alpha TAD peptide to CH1-Zn(2+) produces. . . many well-dispersed peaks with sharp line widths. Taken together, these data support three conformational states for CH1, including an unstructured **metal**-free domain, a partially structured Zn(2+)-bound domain with molten globule characteristics, and a stable, well-ordered HIF-1 alpha TAD-CH1 complex.

L11 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:671304 CAPLUS
DN 138:350624
TI Biomedical applications of radiative decay engineering
AU Lakowicz, Joseph R.; Gryczynski, Ignacy; Malicka, Joanna; Shen, Yibing; Gryczynski, Zygmunt
CS Center for Fluorescence Spectroscopy, Dep. Biochem. and Molecular Biology, Univ. of Maryland/Baltimore, Baltimore, MD, 21201, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4626(Biomedical Nanotechnology Architectures and Applications), 473-485

CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB Fluorescence spectroscopy is a widely used research tool in biochem. and has also become the dominant method enabling the revolution in medical diagnostics, DNA sequencing and genomics. In this forward-looking article we describe a new opportunity in fluorescence, radiative decay engineering (RDE). By RDE we mean modifying the emission of fluorophores or chromophores by a nearby metallic surface, the most important effect being an increase in the radiative decay rate. We describe the usual effects expected form increase in the radiative rates with reference to the biomedical applications of immunoassay and DNA hybridization. We also present expts. which show that metallic particles can increase the quantum yield of low quantum yield fluorophores, increase fluorophore photostability and increase the distance for resonance energy transfer. And finally we show that proximity to silver particles can increase the intensity of the **intrinsic fluorescence** from **DNA**.
RE.CNT 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB Fluorescence spectroscopy is a widely used research tool in biochem. and has also become the dominant method enabling the revolution in medical diagnostics, DNA sequencing and genomics. In this forward-looking article we describe a new opportunity in fluorescence, radiative decay engineering (RDE). By RDE we mean modifying the emission of fluorophores or chromophores by a nearby metallic surface, the most important effect being an increase in the radiative decay rate. We describe the usual effects expected form increase in the radiative rates with reference to the biomedical applications of immunoassay and DNA hybridization. We also present expts. which show that metallic particles can increase the quantum yield of low quantum yield fluorophores, increase fluorophore photostability and increase the distance for resonance energy transfer. And finally we show that proximity to silver particles can increase the intensity of the **intrinsic fluorescence** from **DNA**.
ST radiative decay engineering fluorescence spectroscopy fluorophore **metal**; DNA base analysis radiative decay engineering rhodamine Rose Bengal; silver fluorophore radiative decay engineering nucleic acid

L11 ANSWER 3 OF 9 MEDLINE on STN DUPLICATE 2
AN 2001485445 MEDLINE
DN PubMed ID: 11527380
TI **Intrinsic fluorescence** from **DNA** can be enhanced by metallic particles.
AU Lakowicz J R; Shen B; Gryczynski Z; D'Auria S; Gryczynski I
CS Center for Fluorescence Spectroscopy, Department of Biochemistry and Molecular Biology, University of Maryland School of Medicine, 725 West Lombard Street, Baltimore, Maryland 21201, USA.
NC RR-08119 (NCRR)
SO Biochemical and biophysical research communications, (2001 Sep 7) 286 (5) 875-9.
Journal code: 0372516. ISSN: 0006-291X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200110
ED Entered STN: 20010903
Last Updated on STN: 20011015
Entered Medline: 20011011
AB High sensitivity detection of DNA is essential for genomics. The **intrinsic fluorescence** from **DNA** is very weak and almost all methods for detecting DNA rely on the use of extrinsic fluorescent probes. We show that the intrinsic emission from DNA can be enhanced many-fold by spatial proximity to silver island films. Silver

islands are subwavelength size patches of metallic silver on an inert substrate. Time-resolved measurements show a decreased lifetime for the intrinsic DNA emission near the silver islands. These results of increased intensity and decreased lifetime indicate a **metal**-induced increase in the radiative rate decay of the DNA bases. The possibility of increased radiative decay rates for DNA bases and other fluorophores suggest a wide variety of DNA measurements and other biomedical assays based on **metal**-induced increases in the fluorescence quantum yield of weakly fluorescent substances.
Copyright 2001 Academic Press.

TI **Intrinsic fluorescence** from **DNA** can be enhanced by metallic particles.

AB High sensitivity detection of DNA is essential for genomics. The **intrinsic fluorescence** from **DNA** is very weak and almost all methods for detecting DNA rely on the use of extrinsic fluorescent probes. We show. . . lifetime for the intrinsic DNA emission near the silver islands. These results of increased intensity and decreased lifetime indicate a **metal**-induced increase in the radiative rate decay of the DNA bases. The possibility of increased radiative decay rates for DNA bases and other fluorophores suggest a wide variety of DNA measurements and other biomedical assays based on **metal**-induced increases in the fluorescence quantum yield of weakly fluorescent substances.
Copyright 2001 Academic Press.

L11 ANSWER 4 OF 9 MEDLINE on STN DUPLICATE 3
AN 2001568058 MEDLINE
DN PubMed ID: 11673890
TI Radiative decay engineering: biophysical and biomedical applications.
AU Lakowicz J R
CS Center for Fluorescence Spectroscopy, Department of Biochemistry and Molecular Biology, University of Maryland at Baltimore, 725 W. Lombard Street, Baltimore, Maryland 21201, USA.
NC RR-01889 (NCRR)
SO Analytical biochemistry, (2001 Nov 1) 298 (1) 1-24. Ref: 120
Journal code: 0370535. ISSN: 0003-2697.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA English
FS Priority Journals
EM 200202
ED Entered STN: 20011025
Last Updated on STN: 20020215
Entered Medline: 20020214

AB Fluorescence spectroscopy is a widely used research tool in biochemistry and molecular biology. Fluorescence has also become the dominant method enabling the revolution in medical diagnostics, DNA sequencing, and genomics. To date all the fluorescence observables, including spectral shifts, anisotropies, quantum yields, and lifetimes, have all been utilized in basic and applied uses of fluorescence. In this forward-looking article we describe a new opportunity in fluorescence, radiative decay engineering (RDE). By RDE we mean modifying the emission of fluorophores or chromophores by increasing or decreasing their radiative decay rates. In most fluorescence experiments the radiative rates are not changed because these rates depend on the extinction coefficient of the fluorophore. This intrinsic rate is not changed by quenching and is only weakly dependent on environmental effects. Spectral changes are usually caused by changes in the nonradiative rates resulting from quenching or resonance energy transfer. These processes affect the emission by providing additional routes for decay of the excited states without emission. In contrast to the relatively constant radiative rates in free solution, it is known that the radiative rates can be modified by

placing the fluorophores at suitable distances from metallic surfaces and particles. This Review summarizes results from the physics literature which demonstrate the effects of metallic surfaces, colloids, or islands on increasing or decreasing emissive rates, increasing the quantum yields of low quantum yield chromophores, decreasing the lifetimes, and directing the typically isotropic emission in specific directions. These effects are not due to reflection of the emitted photons, but rather as the result of the fluorophore dipole interacting with free electrons in the **metal**. These interactions change the intensity and temporal and spatial distribution of the radiation. We describe the unusual effects expected from increases in the radiative rates with reference to intrinsic and extrinsic biochemical fluorophores. For instance, the decreased lifetime can result in an effective increase in photostability. Proximity to nearby metallic surfaces can also increase the local field and modify the rate of excitation. We predict that the appropriate localization of fluorophores near particles can result in usefully high emission from "nonfluorescent" molecules and million-fold increases in the number of photons observable from each fluorophore. We also describe how RDE can be applied to medical testing and biotechnology. As one example we predict that nearby **metal** surfaces can be used to increase the low intrinsic quantum yields of nucleic acids and make unlabeled **DNA** detectable using its **intrinsic metal**-enhanced **fluorescence**.

AB . . . reflection of the emitted photons, but rather as the result of the fluorophore dipole interacting with free electrons in the **metal**. These interactions change the intensity and temporal and spatial distribution of the radiation. We describe the unusual effects expected from. . . We also describe how RDE can be applied to medical testing and biotechnology. As one example we predict that nearby **metal** surfaces can be used to increase the low intrinsic quantum yields of nucleic acids and make unlabeled **DNA** detectable using its **intrinsic metal**-enhanced **fluorescence**.

L11 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:545930 CAPLUS
DN 134:14414
TI Intrinsic Bending in GGCC Tracts as Probed by Fluorescence Resonance Energy Transfer
AU Wildeson, Jessi; Murphy, Catherine J.
CS Department of Chemistry and Biochemistry, University of South Carolina, Columbia, SC, 29208, USA
SO Analytical Biochemistry (2000), 284(1), 99-106
CODEN: ANBCA2; ISSN: 0003-2697
PB Academic Press
DT Journal
LA English
AB Double-stranded oligonucleotides containing the sequence 5'-GGCC-3' can be intrinsically bent, according to x-ray crystallog. and gel electrophoresis mobility studies. We have performed fluorescence resonance energy transfer (FRET) expts. with dye-labeled oligonucleotides to further investigate the solution structure of this sequence. We find that 5'-GGCC-3'-containing oligonucleotides bring 5'-attached donor and acceptor dyes much closer together than a comparable "straight" sequence that contains 5'-GCGC-3'. The bend angle for the 5'-GGCC-3' sequence is estimated to be .apprx.70°, much larger than the crystallog. observed 23° kink but in agreement with other FRET work. In contrast to gel electrophoresis studies, divalent **metal** ions do not promote increased kinking in 5'-GGCC-3' above background as judged by FRET. Thus, sequence-dependent structural effects in DNA may be a complicating feature of FRET expts. (c) 2000 Academic Press.
RE.CNT 69 THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB Double-stranded oligonucleotides containing the sequence 5'-GGCC-3' can be intrinsically bent, according to x-ray crystallog. and gel electrophoresis mobility studies. We have performed fluorescence resonance energy transfer (FRET) expts. with dye-labeled oligonucleotides to further investigate the solution structure of this sequence. We find that 5'-GGCC-3'-containing oligonucleotides bring 5'-attached donor and acceptor dyes much closer together than a comparable "straight" sequence that contains 5'-GCGC-3'. The bend angle for the 5'-GGCC-3' sequence is estimated to be .apprx.70°, much larger than the crystallog. observed 23° kink but in agreement with other FRET work. In contrast to gel electrophoresis studies, divalent **metal** ions do not promote increased kinking in 5'-GGCC-3' above background as judged by FRET. Thus, sequence-dependent structural effects in DNA may be a complicating feature of FRET expts. (c) 2000 Academic Press.

IT Conformation
(**DNA**; **intrinsic** bending in GGCC-containing oligonucleotides as probed by **fluorescence** resonance energy transfer)

IT **DNA**
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(GGCC-containing; **intrinsic** bending in GGCC-containing oligonucleotides as probed by **fluorescence** resonance energy transfer)

L11 ANSWER 6 OF 9 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN 1999:81088 BIOSIS
DN PREV199900081088
TI **Metal**-induced changes in the **fluorescence** properties of **intrinsic** tyrosine and tryptophan subtitution mutant of Alzheimer's Abeta **peptide**.
AU Garzon-Rodriguez, W. [Reprint author]; Sepulveda-Becerra, M.; Iatsimirski, K. A.; Glabe, G. C. [Reprint author]
CS Dep. Molecular Biology Biochemistry, Univ. Calif., Irvine, CA 92612, USA
SO Society for Neuroscience Abstracts, (1998) Vol. 24, No. 1-2, pp. 1708. print.
Meeting Info.: 28th Annual Meeting of the Society for Neuroscience, Part 2. Los Angeles, California, USA. November 7-12, 1998.
ISSN: 0190-5295.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
Conference; (Meeting Poster)
LA English
ED Entered STN: 1 Mar 1999
Last Updated on STN: 1 Mar 1999
TI **Metal**-induced changes in the **fluorescence** properties of **intrinsic** tyrosine and tryptophan subtitution mutant of Alzheimer's Abeta **peptide**.
IT . . .
mental disorders, nervous system disease
Alzheimer Disease (MeSH)
IT Chemicals & Biochemicals
copper; iron; zinc; A-beta peptide 1-40 [amyloid-beta peptide 1-40]: **metal** induced changes, tyrosine substitution mutant, tryptophan substitution mutant, **metal** interactions; A-beta peptide 1-42 [amyloid-beta peptide 1-42]: fluorescence properties, **metal** induced changes, tyrosine substitution mutant, **metal** interactions

L11 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:802659 CAPLUS
DN 130:179416
TI Recent developments in fluorescence spectroscopy. Long-lived **metal** -ligand probes, three-photon excitation, two-color two-photon excitation

and optical control of excited state population

AU Lakowicz, Joseph R.; Gryczynski, Ignacy; Szmacinski, Henry

CS Center for Fluorescence Spectroscopy, Department of Biochemistry and Molecular Biology, University of Maryland School of Medicine, Baltimore, MD, 21201, USA

SO Fluorescence Microscopy and Fluorescent Probes, [Based on the Proceedings of the Conference on Fluorescence Microscopy and Fluorescent Probes], 2nd, Prague, Apr. 9-12, 1997 (1998), Meeting Date 1997, 1-12. Editor(s): Slavik, Jan. Publisher: Plenum, New York, N. Y.
CODEN: 67BTAH

DT Conference; General Review

LA English

AB A review, with 31 refs. In recent years we have witnessed a rapid growth of the applications of fluorescence, and the development of novel measurement methods. One area of rapid growth has been in two-photon excitation, which is now practical due to the increasing availability of ps and fs lasers. In the present paper, we will show that using the fundamental output of a fs titanium:sapphire laser, it is possible and practical to observe three-photon excitation of **DNA** stains, Ca2+ probe Indo-1, or the **intrinsic** tryptophan **fluorescence** of proteins. Most studies of two-photon excitation use two photons of the same wavelength. We now show that two-photon excitation can be obtained using two-photons at different wavelengths. The potential advantages of two-color two-photon excitation include localization of the excited volume at the region of beam overlap, and the possibility of increased selectivity by independent control of each laser beam. Another exptl. opportunity is provided by the increasing availability of multiwavelength laser sources, which allow fluorescence expts. with multiple pulses. We used the phenomenon of stimulated emission to quench and modify the excited state populations. Light quenching allows selective removal of excited state fluorophores based on emission wavelength, decay time or orientation. In the case of evanescent waves due to total internal reflection (TIR) we show that light quenching can selectively remove fluorophores from the interface region, and provide spatially localized excitation 5000 Å into the aqueous phase. And finally, we derive the development of **metal**-ligand complex probes which provide the opportunity to measure dynamics on the microsecond timescale. This versatile class of fluorophores allows a wide range of decay times and emission wavelengths based on the choice of ligand and **metal**. Importantly, transition **metal**-ligand complexes with non-identical dimine ligands display high fundamental anisotropies. Conjugatable MLCs have already been developed and used to measure correlation times as long as 5 μs.

RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Recent developments in fluorescence spectroscopy. Long-lived **metal** -ligand probes, three-photon excitation, two-color two-photon excitation and optical control of excited state population

AB A review, with 31 refs. In recent years we have witnessed a rapid growth of the applications of fluorescence, and the development of novel measurement methods. One area of rapid growth has been in two-photon excitation, which is now practical due to the increasing availability of ps and fs lasers. In the present paper, we will show that using the fundamental output of a fs titanium:sapphire laser, it is possible and practical to observe three-photon excitation of **DNA** stains, Ca2+ probe Indo-1, or the **intrinsic** tryptophan **fluorescence** of proteins. Most studies of two-photon excitation use two photons of the same wavelength. We now show that two-photon excitation can be obtained using two-photons at different wavelengths. The potential advantages of two-color two-photon excitation include localization of the excited volume at the region of beam overlap, and the possibility of increased selectivity by independent control of each laser beam. Another exptl. opportunity is provided by the increasing availability of multiwavelength laser sources, which allow fluorescence expts. with multiple pulses. We

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L11 ANSWER 8 OF 9 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
AN 92168231 EMBASE
DN 1992168231
TI Role of magnesium ion in the interaction between chromomycin A3 and DNA: Binding of chromomycin A3-Mg2+ complexes with DNA.
AU Aich P.; Sen R.; Dasgupta D.
CS Biophysics Division, Saha Institute of Nuclear Physics, 37 Belgachia Road,Calcutta 700 037, India
SO Biochemistry, (1992) 31/11 (2988-2997).
ISSN: 0006-2960 CODEN: BICHAW
CY United States
DT Journal; Article
FS 030 Pharmacology
037 Drug Literature Index
LA English
SL English
AB Chromomycin A3 is an antitumor antibiotic which blocks macromolecular synthesis via reversible interaction with DNA template only in the presence of divalent **metal** ions such as Mg2+. The role of Mg2+ in this antibiotic- DNA interaction is not well understood. We approached the problem in two steps via studies on the interaction of (i) chromomycin A3 and Mg2+ and (ii) chromomycin A3-Mg2+ complex(es) and DNA. Spectroscopic techniques such as absorption, fluorescence, and CD were employed for this purpose. The results could be summed up in two parts. Absorption, fluorescence, and CD spectra of the antibiotic change upon addition of Mg2+ due to complex formation between them. Analysis of the quantitative dependence of change in absorbance of chromomycin A3 (at 440 nm) upon input concentration of Mg2+ indicates formation of two types of complexes with different stoichiometries and formation constants. Trends in change of fluorescence and CD spectroscopic features of the antibiotic in the presence of Mg2+ at different concentrations further corroborate this result. The two complexes are referred to as complex I (with 1:1 stoichiometry in terms of chromomycin A3:Mg2+) and complex II (with 2:1 stoichiometry in terms of chromomycin A3:Mg2+), respectively, in future discussions. The interactions of these complexes with calf thymus DNA were examined to check whether they bind differently to the same **DNA**. Evaluation of binding parameters, **intrinsic** binding constants, and binding stoichiometry, by means of spectrophotometric and **fluorescence** titrations, shows that they are different. Distinctive spectroscopic features of complexes I and II, when they are bound to DNA, also support that they bind differently to the above DNA. Measurement of thermodynamic parameters characterizing their interactions with calf thymus DNA shows that complex I-DNA interaction is exothermic, in contrast to complex II-DNA interaction, which is endothermic. This feature implies a difference in the molecular nature of the interactions between the complexes and calf thymus DNA. These observations are novel and significant to understand the antitumor property of the antibiotic.

They are also discussed to provide explanations for the earlier reports that in some cases appeared to be contradictory.

AB . . . is an antitumor antibiotic which blocks macromolecular synthesis via reversible interaction with DNA template only in the presence of divalent **metal** ions such as Mg2+. The role of Mg2+ in this antibiotic- DNA interaction is not well understood. We approached the. . . The interactions of these complexes with calf thymus DNA were examined to check whether they bind differently to the same **DNA**. Evaluation of binding parameters, **intrinsic** binding constants, and binding stoichiometry, by means of spectrophotometric and **fluorescence** titrations, shows that they are different. Distinctive spectroscopic features of complexes I and II, when they are bound to DNA,. . .

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AN 88244048 EMBASE

DN 1988244048

TI Phospholipid bindng properties of bovine prothrombin peptide residues 1-45.

AU Pollock J.S.; Shepard A.J.; Weber D.J.; Olson D.L.; Klapper D.G.; Pedersen L.G.; Hiskey R.G.

CS Department of Chemistry, University of North Carolina, Chapel Hill, NC 27599, United States

SO Journal of Biological Chemistry, (1988) 263/28 (14216-14223). ISSN: 0021-9258 CODEN: JBCHA3

CY United States

DT Journal

FS 029 Clinical Biochemistry

LA English

SL English

AB The present study investigates the unique contribution of the NH2-terminal 33 residues of prothrombin, the γ-carboxyglutamic acid (Gla) domain, to the Ca(II) and phospholipid-binding properties of prothrombin. Two Gla domain peptides, 1-42 and 1-45, produced by chymotryptic cleavage of prothrombin fragment 1 (residues 1-156 of the amino terminus of bovine prothrombin) and isolated by anion-exchange chromatography were utilized to characterize the Gla domain of prothrombin. This investigation utilized several experimental approaches to examine the properties of the Gla domain peptides. These studies were somewhat hampered by the **metal** ion-induced insolubility of the peptides. However, the 1-45 peptide was specifically radioiodinated, which facilitated the study of this **peptide** at low concentrations. In contrast to prothrombin fragment 1, the **intrinsic fluorescence** of both 1-42 and 1-45 was not quenched upon the addition of 1 mM Ca(II) or any concentration of Mg(II). Equilibrium dialysis studies revealed that the 1-42 peptide bound three Ca(II) ions noncooperatively, whereas fragment 1 binds seven CA(II) ions in a positive cooperative manner. Ca(II)-promoted conformational changes are observed by comparison of electrophoretic mobility changes in the presence of increasing Ca(II) concentrations. Prothrombin, fragment 1, and the Gla domain peptides 1-42 and 1-45 exhibited similar electrophoretic mobility behavior in the presence of Ca(II) ions. The radiolabeled 1-45 peptide was found to comigrate with phospholipid vesicles on gel permeation chromatography in the presence of Ca(II). Fragment 1 was shown to inhibit this Ca(II)-dependent phospholipid binding of 1-45, demonstrating that the 1-45 peptide does possess the necessary phospholipid-binding structure. Furthermore, a **metal** ion-dependent conformational monoclonal antibody, F9.29, was inhibited from binding fragment 1 by the 1-42 peptide.

AB . . . utilized several experimental approaches to examine the properties of the Gla domain peptides. These studies were somewhat hampered by the **metal** ion-induced insolubility of the peptides. However, the 1-45 peptide was specifically radioiodinated, which facilitated the study of this **peptide** at low concentrations. In

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